

REMARKS

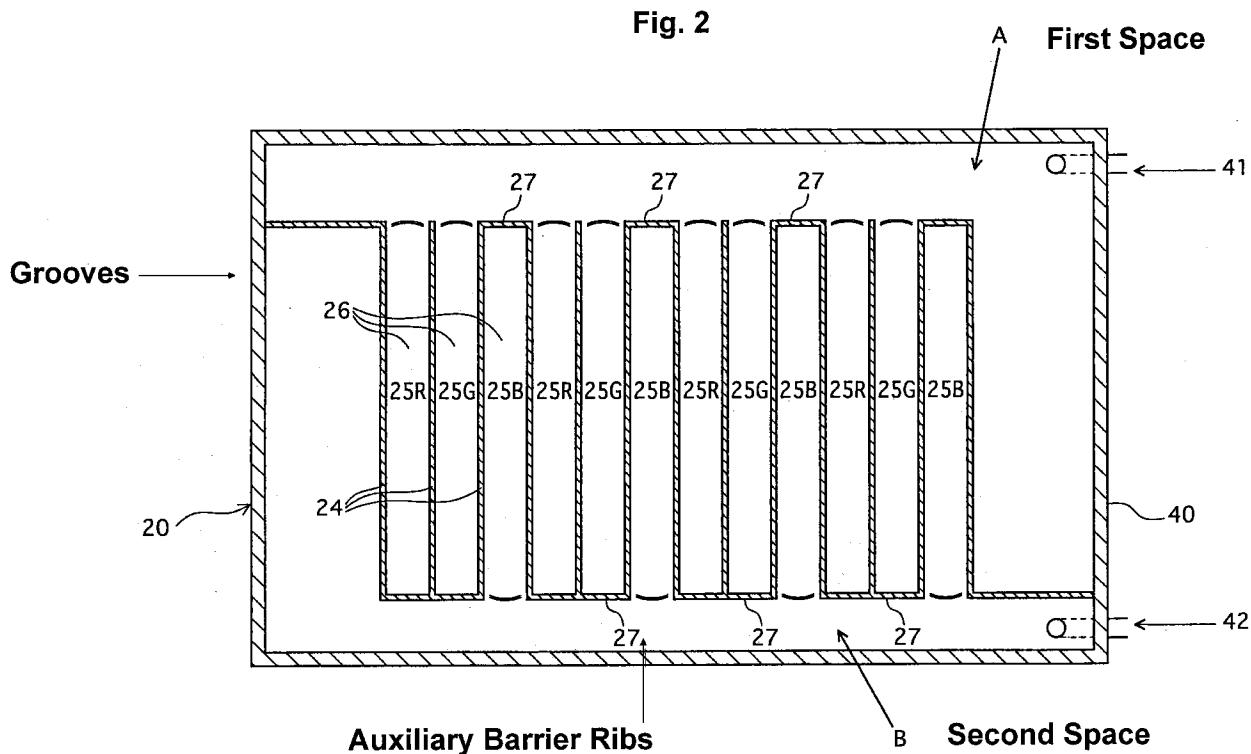
The commercial success of flat panel display screens such as plasma display televisions resides in a very competitive field with a large number of international companies competing on both cost and performance.

The present invention recognizes that the luminous efficiency and the effects of gas composition, pressure and discharge voltage can vary for each type of phosphor provided to produce an emission color. Additionally, the composition and pressure conditions of the discharge gas can influence not only the performance characteristics of a specific phosphor layer but also the lifetime of the phosphor layer and the display screen.

The present invention improves these characteristics, including the lifetime of the phosphor layers, to provide a longer life and a more economical product while also adjusting the emission luminance to enhance the performance of each specific color while suppressing variation in the discharge voltage between the spaces where the phosphor layers of various colors are provided. Thus, the composition and pressure of each discharge gas can be separately adjusted for each type of phosphor layer to provide a significant improvement in creating a high definition image display device by having grooves between barrier ribs interconnected to provide at least two separate internal spaces of discharge gas for different phosphor layers.

Reference can be made to Figures 2 and 3 of our drawings which illustrate a first embodiment of the present invention. As noted on Page 11, the grooves 26 that are formed between the barrier ribs 24 can support a phosphor layer 25R and also a phosphor layer 25G, it can have a closed lower end by a formation of selected auxiliary barrier ribs 27 with open ends interconnected. The remaining grooves 26 in which the phosphor layers 25B are formed, are closed at the upper end by the auxiliary barrier ribs 27. Such arrangement effectively provides a

first space A of red and green phosphor layers, and a second space B for blue phosphor layers that are effectively sealed off from each other and serviced by separate exhaust passages 41 and 42.



The Office Action rejected Claims 8, 10 and 19 as being obvious over a combination of *Ishimoto et al.* (U.S. Patent No. 6,650,055) in view of *Wedding* (U.S. Patent No. 7,157,854).

The Office Action acknowledged that the *Ishimoto et al.* reference failed to teach phosphor layers including at least two types of phosphors and discharge gases enclosed in different narrow tubes that were different from each other by at least one of a composition and pressure of gas.

It was asserted, however, that the *Wedding* reference taught discharge gases that are different from each other in at least one of composition and pressure.

Our amended independent Claims 8 and 19 defined, as shown in Figure 2, the internal discharge space, by:

“partitioned by a plurality of barrier ribs in stripe pattern which form a plurality of grooves, each groove being closed at one end by an auxiliary barrier rib such that among the plurality of grooves, grooves constituting the first space connect with one another and grooves constituting the second space connect with one another.”

Our amendments to the current independent claims are supported in our specification, as can be seen from Page 11, Line 16 through Page 12, Line 1. Thus, no new matter is entered into the claims.

As is apparent from above, according to the amended Claims 8 and 19, the internal discharge space formed between the substrates is divided into a separate first space provided with a first phosphor layer and a separate second space provided with a second different phosphor layer by partitioning the internal space with a plurality of interconnected barrier ribs and auxiliary barrier ribs, and unlike the cited references, we do not use a plurality of self contained gas discharge tubes arranged on a substrate to divide the internal space.

With regards to our arrangement, the auxiliary barrier ribs close one end of each groove with reference to Figures 2 and 3. As recited as (Example 1) in a First Embodiment in the specification of the present application, the grooves 26 in which a phosphor layer 25R and a phosphor layer 25G are formed are closed at a lower end by the auxiliary barrier ribs 27, and the grooves 26 in which phosphor layers 25B are formed are closed at an upper end by the auxiliary barrier ribs 27.

The internal space formed between the substrates is divided in a manner that (i) the grooves in which a phosphor layer 25R and a phosphor layer 25G are formed are included in the first space A and the grooves in which phosphor layers 25B are formed are included in the

second space B and (ii) the grooves 26 included in the first space A directly connect with one another and the grooves 26 included in the second space B also directly connect with one another.

“Thus when differences that may appear technologically minor nonetheless have a practical impact, particularly in a crowded field, the decision-maker must consider the obviousness of the new structure in this light.”

Continental Can Co. USA Inc. v. Monsanto Co., 20 U.S.P.Q. 2d. 1746, 1752 (Fed. Cir. 1991).

By such a formation of interconnected grooves a conventional deposition of the phosphor layer can be used in a production process and the respective barrier ribs can be integrally formed on the substrate in an economical manner while providing a sealed space that can be both exhausted and charged with a different pressure and/or composition of gases. For example, as described on Page 14, Line 20 to Page 15, Line 20, a different quantity of Xe at a different pressure (Torr) can be established so that the amount of blue emission can be improved and the color temperature of white can be increased.

The *Ishimoto et al.* (U.S. Patent No. 6,650,055) was the primary reference relied upon to teach the structure of our claims. *Ishimoto et al.*, however, teaches to a person of ordinary skill in the field to provide a stacked array of fluorescent tubes with the specific improvement being increasing the contact area on the outside surface of a gas discharge tube without forming an electrode on the gas discharge tube.

Additionally, the reference teaches sandwiching the array of individual tubes so that they are sandwiched between a pair of support members including, for example, a flexible or a transparent glass substrate molded to conform to the outer circumference of the glass tubes. See Figures 1 and 2.

The individual phosphor is provided in the form of a phosphor paste applied in a support or carrier plate 6 having a configuration to match the inner circumference of the gas discharge tube. The paste is appropriately burnt and then the support plate is inserted into the glass tube. See Column 5, Lines 30-41. Features of barrier ribs in a striped pattern and auxiliary barrier ribs effectively dividing discharge space into two separate areas of a striped pattern is certainly neither suggested, taught nor envisioned in the apparent sealed fluorescent tubes of the *Ishimoto et al.* disclosure.

Recognition of the problem of different color phosphor being used in a plasma display device such as a color television is neither a concern, nor is there any teaching of improving the performance of one phosphor such as blue relative to other phosphor depositions in an alternative space such as red and green with an improved illumination characteristics and life.

Needless to say, the method of forming the *Ishimoto et al.* reference is completely apart from that of a conventional provision of barrier ribs in a striped pattern with an array of electrodes for applying voltage to create variable gas discharge patterns to produce moving pictures.

In summary, a person of ordinary skill would only be taught by *Ishimoto et al.* to address a minor improvement in the prior art array of glass discharge tubes by increasing the electrode contact area on the outside surface of the glass cylindrical tubes.

Wedding (U.S. Patent No. 7,157,854) also suggested self contained elongated tubes that were of particular value for single substrate structures and flexible or bendable displays. Persons of ordinary skill in the field would be taught that the plasma display device as set forth in the Title of the patent, Tubular PDT and as defined in the Summary of the Invention in Column 4, Lines 49-51 is as follows:

As used herein elongated tube is intended to include capillary, filament, filamentary, illuminator, hollow rods, or other such terms.

As can be determined from the Figures (see Figure 1B), rectangular cross sectional tubes formed from an optical grade clear fused quartz, are contemplated. See Column 6, Lines 1-5. The individual capillary tubes are sealed with a plug 101A shown in Figure 1A. As also disclosed in Figure 1A, the phosphor layers are placed on the outside of the tubes and transmission of the UV light through the quartz tube is utilized to excite each of the phosphor channels. See Column 6, Line 60 through Column 7, Line 9.

Thus, the issues of optimizing with different gas pressures a luminance value of a specific phosphor within a discharge space is not a teaching of this reference. The Office Action simply relied upon Column 14, Lines 52-55 to indicate that individual gas tubes can either be equal to or greater or lesser than atmospheric pressure. This amorphic teaching, however, is directed to the advantages of using the hollow quartz fuses that can withstand pressures above atmospheric, especially at utilization locations above sea level. See Column 14, Lines 32-40.

Purportedly, an advantage of the *Wedding* teaching is the capability of having a flexible substrate to support these rectangular quartz tubes. See, for example, the teaching of the claims “a multiplicity of elongated gas-filled tubes positioned on a flexible substrate,” Claim 1.

Finally, the *Shinoda et al.* reference, while not applied against the original independent Claims 8 and 19, appears to be a variation by the common inventorship of the *Ishimoto et al.* disclosure, with both assigned to Fujitsu Ltd. and filed within a month of each other. As such, this reference also teaches sealed glass tubes that permit various configurations of a display such as shown in Figure 18. This reference, however, does not contribute any additional teaching to a person of ordinary skill in the field that would render obvious our current claim structure.

In defining an invention, a difficulty arises in using a two-dimensional verbal definition to represent a three-dimensional invention. To provide protection to an inventor and notification to the public, a proper interpretation of terms utilized in the claims must be adhered to in order to enable an appropriate evaluation of the invention and its scope relative to cited prior art.

Thus, not only should the concept of the invention be found in the prior art, but further, any cited structural elements in a prior art reference should be performing the same function with the same technical understanding to a person of ordinary skill in the field as the invention claims at issue.

Accordingly, our current claims use the following terms that are not suggested nor taught in the references of record:

- (a) barrier ribs in strip pattern form grooves.
(Note, grooves are shown as formed on a substrate in Figure 2 and Webster's New College Dictionary defines "a long, narrow furrow or channel.")
- (b) closed at one end by an auxiliary barrier rib
- (c) grooves constituting the first space connect with one another
(a plurality of grooves connected through open ends.)
- (d) grooves constituting the second space connect with one another
- (e) discharge gases in first and second spaces differ in at least one of composition and pressure

Our discussion with Pinchus Laufer in the Office of Patent Legal Administration, who was involved in writing the Examination Guidelines for Determining Obviousness under 35 USC §103 in view of the Supreme Court decision in *KSR International Co. vs. Teleflex, Inc.* verified that the KSR decision still required a specific rationale that could not be based on hindsight for

purportedly combining the elements in the prior art to meet an invention defined in the patent claims.

Mr. Laufer incorporated the following from the existing MPEP into the Guidelines.

As noted in the MPEP at §2143.02:

A rationale to support a conclusion that a claim would have been obvious is that all the claimed elements were known in the prior art and one skilled in the art could have combined the elements as claimed by known methods with no change in their respective functions, and the combination would have yielded nothing more than predictable results to one of ordinary skill in the art. *KSR International Co. v. Teleflex Inc.*, 550 U.S. ___, ___, 82 USPQ2d 1385, 1395 (2007); *Sakraida v. AG Pro, Inc.*, 425 U.S. 273, 282, 189 USPQ 449, 453 (1976); *Anderson's-Black Rock, Inc. v. Pavement Salvage Co.*, 396 U.S. 57, 62-63, 163 USPQ 673, 675 (1969); *Great Atlantic & P. Tea Co. v. Supermarket Equipment Corp.*, 340 U.S. 147, 152, 87 USPQ 303, 306 (1950). (underline added)

As readily appreciated, the functions taught by each of the cited references is to provide a closed elongated cylindrical or rectangular tube where phosphor layers are either provided on the outside or between rectangular tubes or fired on a substrate plate and inserted within a conventional glass tube. The functions of an increased electrode area while providing flexible substrates, could not suggest the particular internal space partitioned by a plurality of barrier ribs in a striped pattern and interconnected at open ends opposite the closed auxiliary barrier ribs to provide alternative first and second spaces that can be uniquely connected to provide composite areas of separate first and second spaces that are interconnected with different gas characteristics.

Applicant submits that any combination of references that must be modified beyond their functions is suggestive of an unintended use of hindsight that may have been utilized to drive the present rejection. This is particularly true for an Examiner who is attempting to provide a diligent effort that only patentable subject matter occurs. The *KSR* Guidelines do not justify such an approach. There is still a requirement for the Examiner to step back from the zeal of the

examination process and to appreciate that a Patent Examiner has to wear both hats of advocating a position relative to the prior art while at the same time objectively rendering in a judge-like manner a decision on the patentability of the present claims.

As set forth in MPEP 2142,

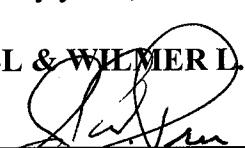
To reach a proper determination under 35 U.S.C. §103, the examiner must step backward in time and into the shoes worn by the hypothetical “person of ordinary skill in the art” when the invention was unknown and just before it was made. In view of all factual information, the examiner must then make a determination whether the claimed invention “as a whole” would have been obvious at that time to that person. Knowledge of applicant’s disclosure must be put aside in reaching this determination, yet kept in mind in order to determine the “differences,” conduct the search and evaluate the “subject matter as a whole” of the invention. The tendency to resort to “hindsight” based upon applicant’s disclosure is often difficult to avoid due to the very nature of the examination process. However, impermissible hindsight must be avoided and the legal conclusion must be reached on the basis of the facts gleaned from the prior art.

It is believed that applicant has now more than adequately defined patentable subject matter and the application is in condition for allowance.

If the Examiner believes a telephone interview will assist in the prosecution of this matter, the undersigned attorney can be contacted at the listed phone number.

Very truly yours,

SNELL & WILMER L.L.P.


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